

CLAIMS:

1. A bullet that will retain markings from a firearm barrel when fired from such firearm, comprising:
- 5 a right cylindrical core with opposed ends, one such opposed end having a tapered section integrally connected thereto, said core being formed from a lead-free composition comprising a filler and a polymer selected from amorphous or low crystallinity polymer, said
- 10 composition retaining it's integrity when fired from the firearm, said right cylindrical core having a jacket that is cylindrical and formed from a thermoplastic polymer or copper, said thermoplastic polymer having a softening point above firearm barrel temperatures, the adhesion
- 15 between the jacket and the core being sufficient to retain the integrity of the bullet on firing until impact, said bullet having a weight that is at least 80% that of a comparable bullet for such firearm, said comparable bullet being formed from lead.
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2. The bullet of Claim 2 in which the weight is at least 85% of the comparable lead bullet.
3. The bullet of any one of Claims 1-2 in
- 25 which the jacket and core separate on impact.
4. The bullet of any one of Claims 1-3 in which the mass of the bullet is sufficient to actuate firearm reloading mechanisms.
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5. The bullet of any one of Claims 1-4 in which the tapered section is a truncated cone or truncated parabellum.
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6. The bullet of any one of Claims 1-4 in which the bullet has a tip that is parabolic, rounded or a hollow point.

7. The bullet of any one of Claims 1-6 in which the jacket of the bullet extends over the tapered section attached to one end of the right cylindrical core.

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8. The bullet of any one of Claims 1-7 in which the other of the opposed ends is a truncated tapered section.

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9. The bullet of any one of Claims 1-8 in which the polymer of the core is an ionomer.

10. The bullet of any one of Claims 1-8 in which the polymer of the core is selected from ethylene/methacrylic acid copolymer ionomers, polyetherester elastomers and polyamides.

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11. The bullet of any one of Claims 1-8 in which the polymer of the core is an ethylene/methacrylic acid copolymer ionomer.

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12. The bullet of any one of Claims 1-8 in which the polymer of the core is polyamide.

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13. The bullet of Claim 12 in which the polyamide is nylon 11.

14. The bullet of any one of Claims 1-13 in which the filler is particles of copper.

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15. The bullet of any one of Claims 1-13 in which the filler is selected from the group consisting of tungsten, bismuth, tin and stainless steel.

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16. The bullet of any one of Claims 1-13 in which the bullet retains markings from the barrel of said firearm.

17. The bullet of any one of Claims 1-16 in which the jacket at the other of the opposed ends is curled inwards towards the tip.

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18. The bullet of Claim 17 in which the remainder of said end is free of jacket.

19. The bullet of any one of Claims 1-18 in which the jacket is copper.

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20. The bullet of any one of Claims 1-18 in which the jacket is a thermoplastic polymer.

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21. A bullet of any one of claims 1-18 in a shell, said bullet being capable of being inserted into a firearm and fired therefrom.

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22. A method for the manufacture of a bullet comprising the steps of:

(a) inserting a right cylindrical shell having one open end into a mould of an injection moulding apparatus, said shell being formed from a thermoplastic polymer or copper;

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(b) injecting a composition of a filler and a polymer selected from amorphous or low crystallinity polymer into said shell; and

(c) removing said bullet so formed from the mould.

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23. The method of Claims 22 in which in step (b), the composition is injected into the right cylindrical shell and the shell is formed into the shape of the bullet.

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24. The method of Claim 23 in which the injection of the compositions and the forming of the

shell to the shape of the bullet is carried out in a one-step injection moulding process.

25. The method of any one of Claims 22-24 in which the shell is copper.

26. The method of any one of Claims 22-25 in which the cylindrical shell has preformed tip.

27. The method of any one of Claim 22-25 in which the tip is a hollow point tip, the end of the cylindrical shell opposed to the open end being formed into a shape in said mould.

28. The method of Claim 27 in which the said end is formed into the shape of a truncated cone.

29. The method of Claim 26 in which, in step (b), the cylindrical shell at its open end is curled in step (b) such that said end is curled inwardly towards the tip.

30. The method of Claim 29 in which the shell is curled inwardly by more than 90°.

31. The method of Claim 29 in which the shell is curled inwardly by at least 150°.

32. The method of Claim 29 in which the shell is curled inwardly by at least 180°.

33. The method of any one of Claims 22-32 in which the polymer of the composition is an ionomer.

34. The method of any one of Claims 22-32 in which the polymer of the core is selected from ethylene/methacrylic acid copolymer ionomers,

polyetherester elastomers and polyamides.

35. The method of any one of Claims 22-32 in
which the polymer of the core is an ethylene/methacrylic
5 acid copolymer ionomer.

36. The method of any one of Claims 22-32 in
which the polymer is nylon 11.

10 37. The method of any one of Claim 22-36 in
which the filler is particles of copper.

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